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Abstract Title:
Rendezvous Radar for the Orbital Maneuvering Vehicle

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This paper describes the development of the Rendezvous Radar Set (RRS) for the Orbital Maneuvering Vehicle (OMV) for the National Aeronautics and Space Administration (NASA). The RRS was to be used to locate, and then provide vectoring information to, target satellites (or Shuttle or Space Station) to aid the OMV in making a minimum-fuel-consumption approach and rendezvous. The RRS design is that of an X-Band, all solid-state, monopulse tracking, frequency-hopping, pulse-Doppler radar system. The development of the radar was terminated when the OMV prime contract to TRW was terminated by NASA. At the time of the termination, the development was in the circuit design stage. The system design was virtually completed, the PDR had been held.

The RRS design was based on Motorola's experiences, both in the design and production of radar systems for the US Army and in the design and production of hi-rel communications systems for NASA space programs. Experience in these fields was combined with the latest digital signal processor and micro-processor technology to design a light-weight, low-power, spaceborne radar. The antenna and antenna positioner (gimbals) technology developed for the RRS is now being used in the satellite-to-satellite communication link design for Motorola's Iridium™ telecommunications system.

The RRS design effort was sponsored by NASA via TRW, the OMV prime contractor.